

PATENT COOPERATION TREATY

From the

INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

BARRY J. SWANS

25 IAN 2015

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY **EXAMINATION REPORT**

(PCT Rule 71.1)

Date of Mailing Date of Mailing (day/month/year) 13 MAY 2005

Applicant's or agent's file reference

SWANSON & BRATSCHUN, LLC 1745 SHEA CENTER DRIVE, SUITE 330

HIGHLANDS RANCH, CO 80129

GENO200.1.7/PCT

IMPORTANT NOTIFICATION

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US03/25027

Applicant

08 August 2003 (08.08.2003)

08 August 2002 (08.08.2002)

EVOLUTIONARY GENOMICS, LLC

- 1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
- A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to
- Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT

Name and mailing address of the IPEA/US

Mail Stop PCT, Attn: IPEA/US Commissioner for Patents

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Authorized officer

James Martinell AMUL

Telephone No. (703) 308-0196

Form PCT/IPEA/416 (July 1992)



PCT₁

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference		
GENO200.1.7/PCT International application No.	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/410
	International filing date (day/mon	th/year) Priority date (day/month/year)
PCT/US03/25027	08 August 2003 (08.08.2003)	
International Patent Classification (IPC) o	r national classification and IPC	08 August 2002 (08.08.2002)
IPC(7): G06F 17/00, 17/10, 17/11: C12O	1/69 1/02 (0012) 22/02 22/03	
Applicant	708, 1702, GOTIN 33/00, 33/15 and	US C1: 702/19, 20; 435/6, 29; 800/3; 436/183
EVOLUTIONARY GENOMICS, LLC		
CONTROL GENOMICS, ELC		
This international preliminal Examining Authority and is	y examination report has been transmitted to the applicant acc	prepared by this International Preliminary ording to Article 36
2. This REPORT consists of a	total of $\frac{3}{2}$ sheets, including thi	is cover sheet.
This report is also accord	anoniad by AND Towns	
which have been amende	apanied by ANNEXES, i.e., she	eets of the description, claims and/or drawings
before this Authority (se	e Rule 70.16 and Section 607 of	eets of the description, claims and/or drawings ort and/or sheets containing rectifications made f the Administrative Instructions under the PCT).
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These annexes consist of a to	tal ofsheets.	•
3. This report contains indication		·
and report contains indication	ns relating to the following item	15:
I Basis of the report		
		•
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III Non-establishment	of report with regard to novelty	, inventive step and industrial applicability
IV Lack of unity of inv	ention	, meetitive step and industrial applicability
. Lasoned statement	under Article 35(2) with regard	to novelty, inventive step or industrial
	and and antiques and the state of the state	such statement
VI Certain documents of	ited	·
VII Certain defects in the	e international application	
Certain observations	on the international application	l
ate of submission of the demand		
	Date of co	ompletion of this report
September 2004 (08.09.2004)	ł	005 (15.04.2005)
me and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/ US	Authorized	officer
Commissioner for Patents P.O. Box 1450		
Alexandria, Virginia 22313-1450	James Mari	tinell June 7000
simile No. (703) 305-3230	Telephone N	√o. (703) 308-0196
PCT/IPEA/409 (cover sheet)(July 1998)		



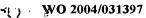
International application No. PCT/US03/25027

I Pagia of		PCT/US03/2502 [†] 7
	the report	
1. With rega	ard to the elements of the international application:*	
the	e international application as originally filed.	
the	e description:	
pag	ges 1-41 as originally filed	
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pag	tes 42 and 43 as originally filed	
Pub	as amended (together with and	ent) under Article 19
page	es NONE , filed with the demand , filed with the letter of 05 March 2004	
the	drawings:	4 (05.03.2004)
page	es NONE, as originally filed es NONE, filed with the demand	
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has been	tement that the information recorded in computer readable in furnished.	e form is identical to the written sequence listing
The ame	endments have resulted in the cancellation of:	•
	the description, pages NONE	
ĽĮ t	the claims, Nos. 14	
	the drawings, sheets/ fig <u>NONE</u>	
This repo	ort has been established as if (some of the	been made, since they have been considered to go
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report as "orig ny replacement	tets which have been furnished to the receiving Office in respons sinally filed" and are not annexed to this report since they do not t sheet containing such amendments must be referred to under it	e to an invitation under Article 14 are referred to in I contain amendments (Rules 70.16 and 70.17). Iem 1 and annexed to this report.
CT/IPEA/409	(Box I) (July 1998)	
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US03/25027

1. STATEMENT		
Novelty (N)	Old and	
	Claims <u>5-8 and 10-13</u>	
	Claims 1-4 and 9	1
Inventive Step (IS)	Claims 5.9	
· · /	Claims 5-8 and 10-13	Y
	Claims 1-4 and 9	N
Industrial Applicability (IA)	Claims 1-13	
		Y
	Claims NONE	N
Claims 5-8 and 10-13 meet the criteria set out in PC nethods. Claims 1-13 meet the criteria set out in PCT Article 2 made or word in it.	Article 33(2)-(3), because the prior art does not teach o	r fairly suggest the clain
e made or used in industry.	the same have matustrial applicability because the s	ubject matter claimed c





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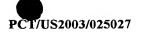


- a) aligning homologous nucleotide sequences of at least about two at least two individual organisms, wherein said at least two individual organisms are selected from the group consisting of individual organisms of a single strain, individual organisms of different strains, individual organisms of the same species, individual organisms of different species, and any combination of the foregoing; and
- b) detecting a region of polynucleotide sequence for which the number of nucleotide differences/site indicates an evolutionary bottleneck;
- c) determining that the region identified in b) is a non-coding region, whereby a regulatory element is identified.
- 6. The method according to any one of claims 1-4, wherein the identifying the number of nucleotide differences/site is calculated by $\pi = 1/[n(n-1)/2] \sum_{i < j} \Pi ij/L$, n is number of sequences, where i and j represent any two sequences being compared in a series of sequences and L = sequence length.
- 7. The method according to any one of claims 1-4, further comprising determining if the region displays a signature of positive selection.
- 20 8. The method of Claim 9, wherein said determining comprises calculating a Ka/Ks value.
 - 10. The method according to any one of claims 1-4, wherein the method is performed in an automated pipeline.
 - 11. The method according to any one of claims 1-4, wherein the at least two strains and/or individuals of a single strain is at least ten strains and/or individuals of a single strain.
 - 12. The method of Claim 11, wherein the at least two strains and/or individuals of a single strain is at least fifteen strains and/or individuals of a single strain.
 - 13. A method for identifying an agent which may modulate a commercially or aesthetically relevant trait that is unique, enhanced or altered in the domesticated organism as



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compared to other domesticated or ancestral species of the domesticated organism, said method comprising contacting at least one candidate agent with a cell, model system or transgenic plant or animal that expresses a polynucleotide sequence that is an evolutionary bottleneck, wherein the agent is identified by its ability to modulate function of the polypeptide encoded by the polynucleotide.

- 14. A method for correlating a nucleotide sequence which is an evolutionary bottleneck to a commercially or aesthetically relevant trait that is unique, enhanced or altered in a domesticated organism, comprising:
 - a) identifying a nucleotide sequence which is an evolutionary bottleneck; and
- b) analyzing the functional effect of the presence or absence of the identified sequence in the domesticated organism or in a model system.